

Claims

[c1] What is claimed is:

1. A method of driving a liquid crystal display (LCD) monitor, the LCD monitor comprising:
an LCD panel for displaying a plurality of pixels arranged in a matrix format;
and
a power supply comprising a plurality of power transmission lines for carrying a plurality of voltages, the power transmission lines of the power supply being electrically coupled to a plurality of driving units, each driving unit comprising an output buffer and a switch, a first end of the switch being selectively connected to either an output terminal of the output buffer or an input terminal of the output buffer, a second end of the switch being connected to an output terminal of the driving unit;
said method comprising:
connecting the first end of the switch to the output terminal of the output buffer for driving an output voltage of the driving unit toward a voltage transmitted via the power transmission line of the power supply; and
connecting the first end of the switch to the input terminal of the output buffer for driving the output voltage of the driving unit toward an average voltage generated from averaging voltages at output terminals of the driving units that are connected to the same power transmission line.

[c2] 2. The method of claim 1 wherein the output buffer further comprises an operational amplifier.

[c3] 3. The method of claim 1 wherein the output buffer further comprises an operational transconductance amplifier.

[c4] 4. The method of claim 1 wherein the first end of the switch is first connected to the output terminal of the output buffer and then connected to the input terminal of the output buffer.

[c5] 5. The method of claim 4 wherein the driving units that are connected to the same voltage transmitted via the corresponding power transmission line of the power supply simultaneously drive the pixels located in a row of the LCD panel

toward a target level after the first end of the switch is connected to the input terminal of the output buffer.

- [c6] 6. The method of claim 1 wherein the voltage transmitted via the power transmission line of the power supply is generated by a voltage divider.
- [c7] 7. The method of claim 1 wherein the power supply further comprises a plurality of multiplexers each electrically connected to one of the driving units and the power transmission lines, and the multiplexer is used for selecting a current route connecting the driving unit and one of the power transmission lines.
- [c8] 8. A method of driving a liquid crystal display (LCD) monitor, the LCD monitor comprising:
 - an LCD panel for displaying a plurality of pixels arranged in a matrix format;
 - a power supply comprising a plurality of output terminals for outputting a plurality of voltages, each output terminal of the power supply being selectively, electrically coupled to a driving unit, the driving unit comprising an output buffer, a first switch electrically connected to an output terminal of the output buffer and an output terminal of the driving unit, and a second switch connected to an output terminal of one driving unit and an output terminal of another driving unit, the output terminal of the output buffer being electrically connected to the output terminal of the driving unit when the first switch is turned on, the output terminal of one driving unit being electrically connected to the output terminal of another driving unit when the second switch is turned on;
 - said method comprising:
 - turning on the first switch for driving an output voltage of the driving unit toward a voltage of the output terminal of the power supply that is connected to the driving unit; and
 - turning on the second switch for driving the output voltage of the driving units toward an average voltage generated from averaging voltages at output terminals of the driving units when the driving units are connected to output terminals of the power supply that provide the same voltage.

[c9] 9. The method of claim 8 wherein the output buffer further comprises an operational amplifier.

[c10] 10. The method of claim 8 wherein the output buffer further comprises an operational transconductance amplifier.

[c11] 11. The method of claim 8 wherein the voltage outputted from the power supply is generated by a voltage divider.

[c12] 12. The method of claim 8, wherein the second switch is turned off in said step of turning on the first switch; and the first switch is turned off in said step of turning on the second switch.

[c13] 13. The method of claim 12, further comprising detecting whether two driving units receive the same voltage from the power supply before said step of turning on the second switch, and if two driving units receive the same voltage proceeding with said step of turning on the second switch.

[c14] 14. The method of claim 8 wherein the second switch is connected to output terminals of two driving units, and the two driving units are prepared to drive corresponding pixels with voltages having the same polarity.

[c15] 15. The method of claim 14 wherein the second switch is connected to output terminals of two adjacent driving units.

[c16] 16. The method of claim 14 wherein the second switch is connected to output terminals of two driving units with at least one another driving unit positioned between the two driving units.

[c17] 17. The method of claim 8 wherein the LCD monitor further comprises a detecting circuit for comparing two input driving data with regard to the driving units that are connected to the second switch to determine whether the corresponding second switch is turned on or not.

[c18] 18. The method of claim 17 wherein the input driving data comprise a plurality of binary bits, and the detecting circuit is a XOR logic circuit for comparing binary bits.

[c19] 19. The method of claim 17 wherein the input driving data comprise a plurality of voltage levels, and the detecting circuit is a comparator for comparing voltage levels.

[c20] 20. A driving device for driving a liquid crystal display (LCD) monitor, the LCD monitor comprising an LCD panel for displaying a plurality of pixels arranged in a matrix format, said driving device comprising:
a power supply comprising a plurality of power transmission lines for carrying a plurality of voltages;
a plurality of driving units electrically coupled to the power transmission lines of said power supply, each driving unit comprising an output buffer and a switch, a first end of said switch being selectively connected to either an output terminal of said output buffer or an input terminal of said output buffer, a second end of said switch being connected to an output terminal of said driving unit;
wherein the first end of said switch is first connected to the output terminal of said output buffer for driving an output voltage of the driving unit toward a voltage transmitted via the power transmission line of said power supply, and the first end of said switch is then connected to the input terminal of said output buffer for driving the output voltage of said driving unit toward an average voltage generated from averaging voltages at output terminals of said driving units that are connected to the same power transmission line.

[c21] 21. A driving device for driving a liquid crystal display (LCD) monitor, the LCD monitor comprising an LCD panel for displaying a plurality of pixels arranged in a matrix format, said driving device comprising:
a power supply comprising a plurality of output terminals for outputting a plurality of voltages;
a plurality of driving units electrically connected to the output terminals of said power supply, said driving unit comprising:
an output buffer;
a first switch connected between an output terminal of said output buffer and an output terminal of said driving unit, the output terminal of said output buffer being electrically connected to the output terminal of said driving unit when

said first switch is turned on; and
 a second switch connected between the output terminal of said driving unit and
 an output terminal of another driving unit, the output terminal of said driving
 unit being electrically connected to the output terminal of another driving unit
 when said second switch is turned on;
 wherein said first switch is first turned on to drive an output voltage of said
 driving unit toward a voltage of the output terminal of said power supply that is
 connected to said driving unit, and said second switch is then turned on to drive
 the output voltage of said driving units toward an average voltage generated
 from averaging voltages at output terminals of said driving units when said
 driving units are connected to output terminals of said power supply that
 provide the same voltage.

[c22] 22. A driving device for driving a flat panel display including a plurality of pixels arranged in a matrix format, said driving device comprising:
 a first driving units receiving a first voltage and being provided to drive the pixels of the flat panel display, said first driving unit comprising:
 a first output buffer;
 a first switch electrically connected between an output terminal of said first output buffer and an output terminal of said first driving unit;
 a second driving units receiving a second voltage and driving the pixels of the flat panel display, said second driving unit comprising:
 a second output buffer;
 a second switch electrically connected between an output terminal of said second output buffer and an output terminal of said second driving unit;
 a third switch electrically connected between the output terminal of said first driving unit and the output terminal of said second driving unit; and
 a detecting circuit for controlling said third switch according to the first voltage and the second voltage.

[c23] 23. The driving device of claim 22, said third switch is turned on if the first voltage and the second voltage are substantially the same.

[c24] 24. A driving device for driving a flat panel display including a plurality of pixels

arranged in a matrix format, said driving device comprising:
a first driving units receiving a first voltage and being provided to drive the pixels of the flat panel display, the first voltage is provided according to a first input driving data, said first driving unit comprising:
a first output buffer;
a first switch electrically connected between an output terminal of said first output buffer and an output terminal of said first driving unit;
a second driving units receiving a second voltage and driving the pixels of the flat panel display, the second voltage is provided according to a second input driving data, said second driving unit comprising:
a second output buffer;
a second switch electrically connected between an output terminal of said second output buffer and an output terminal of said second driving unit;
a third switch electrically connected between the output terminal of said first driving unit and the output terminal of said second driving unit; and
a detecting circuit for controlling said third switch according to the first input driving data and the second input driving data.

[c25] 25. The driving device of claim 24, said third switch is turned on if the first input driving data and the second input driving data are the same.